DOCUMENT RESUME

ED 263 197 TM 850 688

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TITLE Educational Research with an Educological Perspective.
PUB DATE 85
NOTE 25p.; Paper presented at the Annual Meeting of the American Educational Research Association (69th, Chicago, IL, March 31-April 4, 1985).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Comparative Education; Early Childhood Education; *Educational History; *Educational Research; Elementary Secondary Education; Epistemology; *Inquiry; *Observation; Postsecondary Education; Questioning Techniques; Research Needs
IDENTIFIERS *Analytical Methods; *Dependent Variables; *Educology; Empirical Analysis; Empirical Methods

ABSTRACT

The educological perspective treats the educational process as a dependent variable and other factors or processes as independent variables. Educological inquiry can be of at least three kinds, depending on the logic of inquiry implied by the questions which are posed in the inquiry: analytic, normative, or empirical. Successful educological inquiry either affirms, disaffirms, or adds to the existing fund of recorded propositional knowledge about the educational process. That fund of knowledge is properly named educology. The educational process upon which educological inquiry focuses is one in which someone teaches and someone studies some content within some social and cultural milieu. The basic elements or components of the process are teacher, student, content, and setting. Its derivative components include intentions, methods, styles, resources, and language used by teachers and students. Educology is the fund of recorded propositions about the educational process. One can study educology, and from this study, extend knowledge about the educational process to produce descriptions, explanations, and predictions of extant educational phenomena. (PN)

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Educational Research with an Educological Perspective

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A paper presented to the
Annual Conference of the American
Association for Educational Research
Chicago, 31 March - 4 April, 1985

TM 850 688

The Educological Perspective

The field of phenomena to which we point with the term *education* can be characterized from many different points of view. Sociology, for example, characterizes the field in terms of its effects upon society and social organization, status and social class. Economics describes and explains education in terms of its influence upon the production and distribution of goods and services. Psychology considers education with respect to its impact upon attitudes and behavior. In each of these cases, education is treated as the independent variable. It is an adjunct concern, and the central concern is some other factor, e.g., society, economic systems, behavior. In contrast, the educological perspective treats the educational process as the dependent variable, and it inquires of the effects of other factors such as social settings, economic systems, and personality types, upon the educational process.

Here are some examples which illustrate how the educological perspective differs from other perspectives. The question, "How does education affect socioeconomic status?" is a sociological one. Status is the dependent variable, and education is the independent variable. The question, "How does the socioeconomic status of those who participate in the educational process affect the function of education?" is an educological one. Education is the dependent variable. Status is the independent variable. The question, "In what ways does education dispose people to be open minded (vs. close minded)?" is a psychological question. A state of mind or attitude (open mindedness vs. close mindedness) is the dependent variable. Education is the independent variable. The question, "How does open mindedness (vs. close mindedness) on the part of those who participate in education influence the educational process?" is an educological question. Education is the dependent variable. Attitudes are the independent variables. Questions which treat the educational process as the dependent variable have the educological perspective.

The Educational Process and Educology

There is the educational process, and there is recorded, propositional knowledge about that process. Within the process, we find people teaching and studying some content within some geographic, social, and cultural milieu. An American child shows her brother how to fly a kite in the vacant lot next to their apartment, and the brother practices under her guidance until he can control the kite independently of her supervision. This

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is an example of education. The teacher is the sister. The student is the brother. The content is the ins and outs of flying a kite. The geographic setting is the vacant lot. The social milieu is the family. The cultural milieu is American culture. A second example of education is a school teacher in France explaining to a class of school pupils in a *Lycee* how to do titrations and the pupils practicing how to calculate the molarity of solutions through doing some titrations. In this second example, the teacher is an official, certified secondary school teacher; the students are officially enrolled secondary school students; the content is titrations and molarity of solutions; the geographic setting is the secondary school (the *Lycee*); the social milieu is a class of pupils; the cultural milieu is that of French culture.

The characteristic form of the educational process consists of, then, a teacher, a student, a content, and a social and cultural milieu. These are its four basic components, or elements. There are other elements which derive from these four, including intentions of teachers and students, strategies and methods of teachers and students, styles of teachers and students, physical resources, language. The characteristic functioning of education is teaching, studying, and (if all goes well) learning. Teaching is essentially the intentional provision of opportunities for someone to learn some content. Studying is essentially making use of opportunities to learn some content. The content may be propositions, such as, "All matter is made up of discrete particles." It may be attitudes such as courageousness, charitibility, competitiveness. It may be funds of knowledge, such as psychology, microbiology, oceanography. It may be procedural knowing, such as how to tie shoelaces, drive a car, solve a quadratic equation. It may be how to inquire soundly with due regard for appropriate evidence. Education, then, is a process which has both a characteristic form and function, and it is to be found within the functions and transactions of people.

In contrast to the process of education, there is recorded, propositional knowledge about education. It is to be found in books, audio tapes, and other media suitable for recording propositions. Examples of knowledge about education are the true statements, "Learning can be achieved without teaching," "Compulsory schooling is a worldwide phenomenon," and "It is wrong for teachers to victimize their students." Any proposition which can be shown to be true by adducing necessary and sufficient evidence counts as knowledge about education. Such propositions can be assembled and arranged into a collection or fund of knowledge about the educational process.

Within common usage of the English language, and within special usages (i.e., technical usages) of that language, we employ several terms to name the fund of recorded knowledge about education. Included among those terms are *pedagogy, andragogy, ethology, Education,* and *psychopedagogy.*[1] But there is one term which performs the job of naming the fund of knowledge about education even better than these five: *educology.*[2] It suits the job best for three reasons: (1) It names nothing less than the fund of knowledge about education; (2) it names nothing more than the fund of knowledge about education; and (3) it avoids conflating the educational process with recorded knowledge about that process.

Educology implies the inclusion of the entire fund of recorded propositional knowledge about the entire educational process, from early child-

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hood through senescence. It is not limited only to knowledge about the education of children (pedagogy)[3] or to that of male adults (andragogy).[4] It is not recorded knowledge about processes other than education such as knowledge about character development (ethology)[5] or a combination of psychological knowledge and the practice of teaching (psychopedagogy).[6] The name *educology* eliminates the ambiguity that is created by naming the process of guided study *education* and naming the fund of recorded, propositional knowledge about that process with the same term, *education*.

Just as education (i.e., the process of teaching and studying some content in some social and cultural milieu) is not anthropology, or sociology, or psychology, so it is with educology. Education is not educology, any more than animals are zoology, plants are botany, or mind is psychology. Fields of phenomena are one thing. Recorded funds of propositional knowledge about those fields are another.

Educology as Warranted Assertions about Education

So, what is the nature of educology and how is it related to the educational process? Educology consists of warranted assertions about any and all aspects of the educational process, in which education is being characterized as the dependent variable. Warranted assertions here are intended in the sense of statements which have necessary and sufficient evidence to affirm their truth value. This affirmation may be in the form of a high degree of confirmability, thus making the truth value one of probability. The affirmation can also be in the form of necessary implication, thus making the truth value one of necessity (i.e., without exception). Warranted assertions which are educological may be about those who play the role of teachers (such as uncles, aunts, friends, university professors, primary school teachers), those who play the role of students (such as children, adults, clerks, bankers, university students, primary school pupils), content that is taught and studied (such as how to sew buttonholes, the virtues of honesty and peaceful resolution of conflicts, quantum physics, standard procedures for navigating a ship, how to repair a tractor). Educology also consists of warranted assertions about the influence of the milieu in which teaching and studying take place. That milieu includes geographic, social, and cultural dimensions. The cultural milieu for education includes, among other things, the linguistic, political, historical, religious, legal, administrative, and economic factors which impinge upon the educational process.

Ways in Which Educology is Formed and Extended

Forming educology is, essentially, making warranted assertions about education, and educology is extended through the addition of warranted assertions to the already previously established fund of warranted assertions about education. We can extend the fund of warranted assertions (i.e., of recorded propositional knowledge) about education through successful inquiry. Such inquiry implies the research activities of asking, answering, and gathering the appropriate, necessary, and sufficient evidence to support answers to the questions asked. The search implied in the asking may be directed towards finding propositions which are already known, a *retro-searching*. It may be directed towards reaffirming or negating propositons which are already known, a *re-searching*. Or it may be directed towards affirming or negating propositions which are not yet known, a *neo-searching*.[7]

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In any of the three cases, well disciplined inquiry follows sound rules for adducing necessary and sufficient evidence and for drawing supportable inferences. This set of rules, logical operations, and procedures constitutes the discipline for the inquiry. When the inquiry is successful (and if the inquiry is a neo-searching), new propositions about education are affirmed, and the fund of knowledge about education is augmented.

Although related, a fund of recorded knowledge is not identifical with the discipline used to produce that fund, no more than a house is the same as sound rules for home construction, or the activity of playing tennis is the same as rules for tennis play. The activity of asking, answering, and verifying answers to questions is inquiry. The inquiry can be a retro-search, a re-search, or a neo-search. The rules of proof (or the standards of verification) which are followed in the inquiry constitute the discipline. The product of the inquiry, if successful, is a set of warranted assertions about education, i.e., a rediscovery, a revision, or an addition to the fund of knowledge about education. (And that fund, of course, is educology.)

Appropriate Discipline for Forming Educology

What is the discipline that is appropriate for the construction of the fund of recorded knowledge about education? Educology implies the use of at least three sets of rules (or standards of verification) for inquiry: those for forming empirical knowledge claims; those for analytic ones; and those for normative ones. (Knowledge claim, here, is intended to mean warranted assertion.)

1. Empirical Discipline. Empirical knowledge about education is the set of propositions or statements which is verified by observing actual events within a field of phenomena and determining whether the events match or correspond with the statements. Observation can be achieved by extrospection and introspection. Extrospection is observation by means of the five sense organs, and that which is detected by this process is the evidence of physical entities, e.g., teacher behavior, student behavior, classrooms. Introspection is observation by means of other than the five sense organs, and that which is detected by this process is the evidence of mental objects, e.g., one's own emotions, one's own imagined images and sounds, one's own anticipations.

The statement, "The pupil dropped his pencil five times during the teacher's five minute explanation." is an empirical proposition verifiable by extrospection. The statement, "The pupil who dropped his pencil so many times felt bored," is an empirical proposition verifiable by introspection. (Of course, the pupil is the only one in a position to introspect into his own emotional state to detect that boredom; others might infer his boredom from what they extrospect, but only he can introspect his own emotional state.)

By its nature, empirical knowledge is problematic. It is probably true, not necessarily true, and it is true by virtue of a high degree of confirmability, a high degree of corroboration, and no disaffirmation. The various statistical analyses which can be made are means of computing to what degree an empirical statement is probably true.

Empirical knowledge about education divides into at least two categories with respect to the aspects of the field of phenomena to which the statements refer. One category of statements is about extant educational phenomena. A second is about effective educational practices.

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The first category of statements consists of generalizations about existing features, relationships, and states of affairs within the process of teaching and studying. The second category consists of generalizaitons about educational praxis, i.e., praxis in the sense of the set of activities which we should perform and refrain from doing in order to obtain the results that we want in the process of teaching and studying. The first category of empirical educology is scientific, and the second is praxiological.[8]

Praxiology is the same as the fund of recorded knowledge about effective practices, procedures, or methods for doing something. Praxiology includes technology and more than technology, for it is also the recorded fund of knowledge about how to achieve desired results which are other than a physical object. For example, praxiology includes knowledge about how to maintain mental health, how to argue effectively a legal case or how to intentionally increase the probability that someone will learn something. Praxiological educology relates closely to questions such as:

(1) What teaching methods are effective in increasing the probability that 9 year olds will develop an understanding of the relationships among quality of soil, water, light, and plant growth?

(2) Which procedures will most likely engender motivation among pupils to learn physics?

In contrast, scientific educology relates most closely to questions such as:

(1) What teaching methods are most commonly used in reading education?

(2) How do the different attitudes of teachers affect the motivation and achievement of their pupils?

The focus of scientific educology is upon what is, what exists, what prevails. It describes and characterizes existing states of affairs, entities, and relationships within the educational process. Existing states of affairs within education contrast with effective practices in these ways. States of affairs include educational practices, of course, but states of affairs include more than educational practices as well. Also, an educational practice can be effective, yet not be in current use (thus, not an extant state of affairs). Educational practices can, moreover, be ineffective and in current use (thus are an extant state of affairs). Scientific educology is the fund of knowledge about extant states of affairs within education. Praxiological educology is the fund of knowledge about effective practices for education, regardless of whether those practices are currently extant within education.

Both sets of knowledge, the scientific and the praxiological, are part of educology. Both require the use of the same discipline for verification of their truth value, viz., the rules demanded for empirical inquiry. The two funds of knowledge differ only with respect to the feature or aspect of educational phenomena about which they generalize.

Effective practices which praxiological educology describes and characterizes have extrinsic goodness, but not intrinsic goodness. For example, educologists might find that malicious and cruel treatment are effective in causing someone to learn something. Yet the effectiveness of these treatments would not be sufficient justification to use them as educational practices.

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2. Normative Discipline. The distinction between extrinsic and intrinsic goodness within educational practices and states of affairs makes another category of statements about education apparent: those about the intrinsic goodness and badness of goals, practices, policies, conduct, behaviors, or states of affairs in the teaching and studying process. Such statements are normative, and examples of them include:

(1) Teachers should never victimize their students.

(2) Teachers should treat all students fairly and without prejuduce with respect to race, religion, color, gender, or national origin.

We form agreement with a normative statement by establishing some set of standards and deriving some set of criteria to which we are willing to commit ourselves, or to live by. We observe whether behavior, practices, events, goals, policies or states of affairs conform to the criteria (or to what degree they are consistent with our criteria). Statements verified by this process constitute normative knowledge, and the kind of research which forms this knowledge is normative inquiry. Normative inquiry is the same as normative research (including retro-search, re-search, and neo-search). If successful, it forms normative knowledge about education. Such knowledge is true generalizations about intrinsically good states of affairs in the field of educational phenomena. Normative knowledge about education is the same as normative philosophy of education, and it is the same as normative philosophical educology.

3. Analytic Discipline. A third way in which we can verify statements about education is by determining whether they are consistent with other statements. We examine the meaning and necessary implications of a statement in relation to a set of other statements and use necessity reasoning to infer whether the statements are consistent. A statement that can be treated in this way is analytic. Examples are:

(1) Education implies teaching and studying.

(2) Teaching implies the intention for someone to learn, but learning does not imply teaching.

Analytic inquiry, if successful, produces analytic statements which are true, i.e., analytic knowledge. Another possible name for analytic knowledge about education is analytic educology, and analytic educology implies at least three categories of knowledge: (1) analytic philosophy of education; (2) history of education; and (3) jurisprudence of education. All three are subfunds of knowledge about the implications in meaning of language about education. The first is knowledge about the necessary implications of any concept or statement in educational language. The second is knowledge about the necessary implications of language about past educational phenomena. The third is about necessary implications of legal language which guides and regulates persons in the teaching and studying process. All three subfunds share the same discipline, i.e., the discipline of analytic inquiry. They differ with respect to the feature or aspect of educational phenomena about which they generalize.

Educology and Philosophy of Education

Normative knowledge about education is normative educology or normative philosophy of education. Often the term *philosophy of education* is used without distinguishing between analytic and normative philosophy. This

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usage conflates different kinds of knowledge. Analytic philosophy of education requires the use of necessity reasoning, and the knowledge which is analytic philosophy of education describes and characterizes the necessary implications of concepts and sentences used in the language of education. The knowledge that is normative philosophy of education requires the use of evaluative reasoning for its verification, and it describes and characterizes aims, practices, or policies which have worth in education. The theorizing of Dewey, Bayles, and Butler, for example, counts as normative philosophy of education.[9] The theorizing of Ryle, Scheffler, Smith, and Gribble, for example, is analytic philosophy of education.[10]

Relevant to this analysis is the concept of 'language of education'. It functions ambiguously. It can mean the same as (1) 'language which occurs within the process of teaching and studying', and it can also mean (2) 'language which is about the process of teaching and studying'. In its first sense, language of education means language **in** education. In its second sense, language of education means language **about** education. These two sense can be distinguished by subscripts:

(1) [language of education]$_1$ is language **in** education;

(2) [language of education]$_2$ is language **about** education.

What a person says while engaged in the role of teaching is an example of [language of education]$_1$, or language **in** education. Educology, in the sense of generalizations which are true about the field of educational phenomena, is an example of [language of education]$_2$, or language **about** education.

Given this distinction between two senses of language of education, a third meaning of philosophy of education is possible to discern. Language about education can be an object of inquiry. It can be analyzed, and true statements about it can be produced. This set of true statements constitutes a fund of knowledge. That fund is the logic and epistemology of making knowledge claims about the educational process.

In common usage, that fund is philosophy of education as well, because in common usage, the term *education* names (1) the teaching and studying process and (2) knowledge about that process. But a name that more adequately characterizes the fund is analytic philosophy of **educology**.[11] The substitution of the term *educology* for the term *education* in the name *philosophy of education* clarifies the point that the object of knowledge is language **about** education. The substitution of the term *analytic philosophy* for *philosophy* in the name clarifies the point that the fund of knowledge requires the use of the discipline of analytic inquiry.

In summary, then, three meanings of the term *philosophy of education* are possible to discern:

(1) analytic philosophy of education, or the fund of knowledge about meanings of concepts and propositions in educational language;

(2) normative philosophy of education, or knowledge about worthwhile aims, policies, and behaviors in the educational process;

(3) analytic philosophy of **educology**, or the fund of knowledge about rules, logical operations, and procedures for making warranted knowledge claims about the educational process.

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The first two are subfunds of educology. The third is knowledge about educology. It is meta-educology (or knowledge about knowledge about education).[12]

Educology and Educational Anthropology, Sociology, and Psychology

As has been argued the terms *science of education* and *scientific educology* are names for a subfund of knowledge about education which has two distinguishing characteristics: (1) It is about extant aspects of the field of educational phenomena; and (2) the set of statements of which it consists are verifiable by some means of observation (extrospection or introspection).

In one sense, scientific educology includes the psychology of education, sociology of education, and anthropology of education. In another sense, it does not. For example, the term *sociology of education* is made to function ambiguously. At times, it is used to mean 'knowledge about the effects of education upon society'. At other times, it is used to mean 'knowledge about the effects of society upon education'.

Knowledge which treats society as the dependent variable and which characterizes the effects of other factors upon society is sociology. Knowledge which treats education as the dependent variable and which characterizes the effects of other factors upon education is educology. The first sense of the term *sociology of education* implies a subfund of sociology. The second sense of *sociology of education* implies a subfund of educology. A better name for this second sense is the term *educology of society*. The two senses of the term *sociology of education* can be distinguished by a set of subscripts:

(1) [Sociology of education]$_1$ is

(a) knowledge about the effects of education upon society;
(b) knowledge about society; and
(c) a subfund of sociology.

(2) [Sociology of education]$_2$ is

(a) knowledge about the effects of society upon education;
(b) knowledge about education;
(c) the educology of society; and
(d) a subfund of educology.

The same argument holds for terms such as *psychology of education, anthropology of education,* and *economics of education.* Where they are intended to mean knowledge about the effects of something upon education, they are better named the:

(1) educology of mental process;
(2) educology of cultural processes; and
(3) educology of economic systems.

The concept of the term *educology of* extends to any object of knowledge which might be an aspect of the field of educational phenomena. Thus, the

(1) educology of reading,
(2) educology of religious education,
(3) educology of educational leadership, and
(4) educology of curriculum

are al conceivable and clear in their meaning.

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Some maintain that the terms *educational psychology* and *sociology of education* name disciplines.[13] It seems to make more sense to regard them as names for funds of knowledge which are not educology at all, in one sense, and as subfunds of educology, in a second sense. And in the second sense, the subfunds imply the use of all three standards for asserting knowledge claims, i.e., the standards for asserting analytic, empirical, and normative knowledge claims.

One red herring which pops up from time to time is that education (in the sense of educology) is not a discipline in its own right.[14] Rather, it borrows from other disciplines, such as sociology, psychology, and economics. This is a red herring because sociology, psychology, and economics are not, themselves, disciplines. Rather, they are funds of knowledge. Disciplined inquiry is required to develop and form the funds, but the discipline (i.e., the rules, logical operations, procedures) is quite distinguishable from the fund of knowledge which an inquirer or researcher produces as a result of using the discipline. The funds of knowledge which are sociology, psychology, and educology imply use of the same standards for judging the truth value of knowledge claims. An empirical knowledge claim remains empirical, regardless of whether the claim is about society, and thus an empirical sociological claim; about mental processes, and thus an empirical psychological claim; or about education, and thus an empirical educological claim.

A distinction can be made between sociology and educology, of course, but is in relation to the object of knowledge, not the discipline required for producing the knowledge. That is, sociology characterizes a different object of knowledge (viz., society) from educology (which characterizes education). But both sociology and educology require the use of the same discipline, viz., the discipline requisite for making analytic, empirical, and normative knowledge claims.

Educology and Comparative Education

Comparative education is closely related to educology. The term *comparative education* has at least two common usage meanings. In one sense, it is the teaching and studying process as it functions in any and all cultural and national settings. In its second sense, comparative education is the fund of recorded knowledge about two or more entities in the teaching and studying process. More specifically, it is the fund of knowledge which characterizes two or more entitities within education with respect to their similarities and differences. A paradigm case would be an article which compares and contrasts secondary schooling in, say, Brazil, Australia, and Japan.

The first sense of comparative education relates closely to the process of education to such an extent that it is virtually identical with education. The educational process includes all teaching and all studying of any content, everywhere, regardless of national and cultural boundaries, and comparative education in the sense of a process of teaching and studying includes the same.

The second sense of comparative education is identical with the concept of comparative educology. But comparative educology is encompassed by educology. This is so because educology implies generalizations about educational phenomena in any and all cultural and national milieux, and sound generalizations require comparison. That is, the discipline which is required to substantiate knowledge claims about education includes the

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the logical operations of comparison, and comparison is therefore part and parcel of the discipline required for producing educology. Comparative education, in the sense of comparative educology, is educology. It is identical with the fund of propositional knowledge about the educational process.

Educology and Educological Inquiry

The nature of educology and educological inquiry can be further clarified by considering how the following are related to educology: (1) the phenomena which are inquired about; (2) the product of the inquiry; (3) the logic of the inquiry; (4) the techniques of the inquiry; (5) the purpose of the inquiry.

1. **Phenomena.** The something which is investigated in the act of research (i.e., retro-search, re-search, neo-search) can be called the phenomena inquired about, or the phenomena of inquiry. Phenomena in the educational process can be classified into a least five categories. These categories are (1) existing educational phenomena, (2) effective educational practices, (3) effective administrative and governance practices for education, (4) worthwhile policies, practices, and goals for education, and (5) implications of educational language (including language within education and language about education).

2. **Product.** The product of successful inquiry about the educational process is sets of verified statements (i.e., statements which are warranted assertions) about some aspect of the teaching and studying process. These sets of verified statements can be classified into at least three categories, viz., analytic, normative, and empirical knowledge.

3. **Logic.** The set of principles which are used in the verification of statements can be called the logic of an inquiry. At least three principles can be distinguished. There is the principle of necessity reasoning, in which the logic requires that a statement be judged true when it is necessarily implied by a set of premises (i.e., a set of preceding statements). The principle of necessity reasoning is the same as the principle of deduction. There is the principle of evaluative reasoning, in which the logic requires that a statement be judged true when it is necessarily implied by a set of premises. In addition, these premises must be consistent with a set of values to which all persons can reasonably adhere if they were in the same set of circumstances. The principle of evaluative reasoning is the same as the principle of evaluation or the priniciple of normative reasoning. In addition to deduction and evaluation, there is the principle of observation, in which the logic requires that a statement be judge true if it is consistent with observable evidence (i.e., evidence which can be adduced by extrospection and/or introspection).

4. **Techniques.** The actual behaviors performed and procedures followed in adducing evidence to verify a statement can be called the techniques of an inquiry. Examples include survey, experimentaiton, drawing analogies, locating documents, taking notes, classifying, defining, clarifying.

5. **Purpose.** The intended outcome of an inquiry can be called its purpose. At least four purposes of inquiry can be distinguished. They are description, explanation, prediction, and prescription. Description is a set of statements which elucidates a state of affairs as it is. Explanation is a set of statements which provide reasons for why a state of affairs is as it is. Prediction is a set of statements which tell how a state of affairs

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will be. Prescription is a set of statements which tell what, how, and when to do something in order to achieve a desired or desirable state of affairs.

With respect to educological inquiry, all five of these elements of inquiry have a special relationship. Educological inquiry which is empirical uses the principle of observation (both extrospection and introspection) as its logic of inquiry. The product of empirical educological inquiry is verified empirical statements. The techniques of empirical educological inquiry include experimentation, quasiexperimentation, analogy, unobtrusive measures, case studies, participant observation, simulation. The phenomena which are inquired about by empirical educological inquiry divides into three categories. It inquires about existing educational phenomena. It inquires about effective educational practices. And it inquires about effective administrative and governance practices for education. The purposes of empirical educological inquiry about existing educational phenomena are to produce descriptions, explanations, and preditions of extant educational phenomena. The purposes of empirical educological inquiry about effective educational practices are to produce prescriptions for effective educational practices. The purposes of empirical educological inquiry about effective administrative and governance practices for education are to produce prescriptions for effective administrative practices for education. The subfunds of educology which are produced by empirical educological inquiry are scientific educology (or the science of education), praxiological educology (or the praxiology of education), and political praxiological educology (or the political praxiology of education). (See Figure 1.)

KIND OF INQUIRY	EMPIRICAL EDUCOLOGICAL INQUIRY		
LOGIC OF INQUIRY	PRINCIPLE OF OBSERVATION		
PRODUCT OF INQUIRY	VERIFIED EMPIRICAL STATEMENTS		
TECHNIQUES OF INQUIRY	SURVEY, EXPERIMENTAITON, QUASIEXPERIMENTATION, ANALOGY, UNOBTRUSIVE MEASURES, CASE STUDIES, PARTICIPANT OBSERVATION, SIMULATIONS		
PHENOMENA OF INQUIRY (PHENOMENA INQUIRED ABOUT)	EXISTING EDUCATIONAL PHENOMENA	EFFECTIVE EDUCATIONAL PRACTICES	EFFECTIVE ADMINISTRATIVE AND GOVERNANCE PRACTICES FOR EDUCATION
PURPOSE OF INQUIRY	DESCRIPTION, EXPLANATION, PREDICTION OF EDUCATIONAL PHENOMENA	PRESCRIPTION OF EFFECTIVE EDUCATIONAL PRACTICES	PRESCRIPTION OF EFFECTIVE ADMINISTRATIVE PRACTICES FOR EDUCATION
SUBFUND OF EDUCOLOGY	SCIENTIFIC EDUCOLOGY (SCIENCE OF EDUCATION)	PRAXIOLOGICAL EDUCOLOGY (PRAXIOLOGY OF EDUCATION)	POLITICAL PRAXIOLOGICAL EDUCOLOGY (POLITICAL PRAXIOLOGY OF EDUCATION)

Figure 1: Critical Categories for Forming Empirical Educology

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In addition to empirical educology, there is normative educology. Educological inquiry which is normative uses the principle of evaluation (evaluative reasoning) as its logic of inquiry. The product of normative educological inquiry is verified normative statements. The techniques of normative educological inquiry include value clarification, value validation, value vindication, and rational value choice. The phenomena which are inquired about by normative educological inquiry are intrinsically and extrinsically valuable states of affairs within or for the educational process. The purposes of normative educological inquiry about valuable or desirable educational states of affairs are to produce descriptions, explanations, predictions, and prescriptions of extrinsically and intrinsically good, right, moral, ethical, and worthwhile states of affairs, practices, and aims for education. The subfund of educology which is produced by normative educological inquiry is normative educology. Normative educology is the same as normative philosophy of education. (See Figure 2.)

KIND OF INQUIRY	NORMATIVE EDUCOLOGICAL INQUIRY
LOGIC OF INQUIRY	PRINCIPLE OF EVALUATION (EVALUATIVE REASONING)
PRODUCT OF INQUIRY	VERIFIED NORMATIVE STATEMENTS
TECHNIQUES OF INQUIRY	VALUE CLARIFICATION, VALUE VALIDATION, VALUE VINDICATION, RATIONAL VALUE CHOICE
PHENOMENA OF INQUIRY (PHENOMENA INQUIRED ABOUT)	INTRINSICALLY AND EXTRINSICALLY VALUABLE STATES OF AFFAIRS WITHIN AND FOR THE EDUCATIONAL PROCESS
PURPOSE OF INQUIRY	DESCRIPTION, EXPLANATION, PREDICTION, AND PRESCRIPTION OF EXTRINSICALLY AND INTRINSICALLY GOOD, RIGHT, MORAL, ETHICAL, WORTHILE STATES OF AFFAIRS, PRACTICES, AIMS FOR OR WITHIN EDUCATION
SUBFUND OF EDUCOLOGY	NORMATIVE EDUCOLOGY (NORMATIVE PHILOSOPHY OF EDUCATION)

Figure 2: Critical Categories for Forming Normative Educology

The third kind of educological inquiry is analytic. Analytic educological inquiry uses the principle of deduction (necessity reasoning) as its logic of inquiry. The product of analytic educological inquiry is verified analytic statements. The techniques of analytic educological inquiry include definition, explication, illustration, proposition analysis, classification, term substitution, model case, contrary case, invented case, related concept, subscripts, unrelated concept, practical consequences, results in language. The phenomena which are inquired about by analytic educological inquiry can be classified into at least three categories. One is the language within education, i.e., the discourse which occurs within the educational process. A second is the language which has occurred within the educational process of previous times and ages. A third is the legal language which guides and regulates the educational process. The subfunds of educology which are produced by analytic educological inquiry include analytic philosophical educology (analytic philosophy of education), historical educology (history of education), and jurisprudential educology (jurisprudence of education). (See Figure 3.)

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KIND OF INQUIRY	ANALYTIC EDUCOLOGICAL INQUIRY		
LOGIC OF INQUIRY	PRINCIPLE OF DEDUCTION (NECESSITY REASONING)		
PRODUCT OF INQUIRY	VERIFIED ANALYTIC STATEMENTS		
TECHNIQUES OF INQUIRY	CONCEPT ANALYSIS, PROPOSITIONAL ANALYSIS, DEFINITION, EXPLICATION, ILLUSTRATION, MODEL CASE, CONTRARY CASE, BORDERLINE CASE, INVENTED CASE, RELATED CONCEPT, UNRELATED CONCEPT, PRACTICAL CONSEQUENCES TECHNIQUE, RESULTS IN LANGUAGE, SUBSCRIPTS, INVENTED TERMS		
PHENOMENA OF INQUIRY (PHENOMENA INQUIRED ABOUT)	ALL LANGUAGE WITHIN THE EDUCATIONAL PROCESS	LANGUAGE WITHIN THE EDUCATION OF PREVIOUS TIMES AND AGES	LEGAL LANGUAGE WHICH GUIDES AND REGULATES THE EDUCATIONAL PROCESS
PURPOSE OF INQUIRY	DESCRIPTION, EXPLANATION OF IMPLICATIONS OF ALL LANGUAGE WITHIN THE EDUCATIONAL PROCESS	DESCRIPTION, EXPLANATION OF IMPLICATIONS OF LANGUAGE WITHIN THE EDUCATIONAL PROCESS OF PREVIOUS TIMES AND AGES	DESCRIPTION, EXPLANATION OF IMPLICATIONS LEGAL LANGUAGE REGULATING THE EDUCATIONAL PROCESS
SUBFUND OF EDUCOLOGY	ANALYTIC PHILOSOPHICAL EDUCOLOGY (ANALYTIC PHILOSOPHY OF EDUCATION)	HISTORICAL EDUCOLOGY (HISTORY OF EDUCATION)	JURISPRUDENTIAL EDUCOLOGY (JURISPRUDENCE OF EDUCATION)

Figure 3: Critical Categories for Forming Analytic Educology

In addition to educological inquiry, there is meta-educological inquiry. The distinction between language within the educational process (what teacher says to student and vice versa) and language about the educational process (what is said about teacher and student) has already been made. There can be knowledge about the educational process, i.e., verified statements about teacher and student. There also can be knowledge about what is said about teacher and student, i.e., verified statements about statements about the educational process. Verified statements about the educational process are educology. Verified statements about statements about the educational process are meta-educology. The statement,

> Compulsory schooling is a requirement which all contemporary nations have stipulated in law,

is an example of educology. In contrast, the statement,

> The statement, "Compulsory schooling is a requirement which all contemporary nations have stipulated in law," requires verification by examining the statutes of every nation,

is an example of meta-educology. It is knowledge about a statement. Meta-educological inquiry is research (i.e., retro-search, re-search, neo-

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LEVEL 2: META-EDUCOLOGY	VERIFIED STATEMENTS ABOUT STATEMENTS ABOUT THE EDUCATIONAL PROCESS
LEVEL 1: EDUCOLOGY	VERIFIED STATEMENTS ABOUT THE EDUCATIONAL PROCESS
LEVEL 0: EDUCATION	THE PHENOMENA OF TEACHING AND STUDYING SOME CONTENT IN SOME SOCIAL AND CULTURAL MILIEU

Figure 4: Education, Educology, and Meta-Educology

search) about the necessary implications of discourse about the educational process. It requires the use of the pinciple of deduction (necessity reasoning) as its logic of inquiry. It produces verified analytic meta-statements as its product of inquiry. Its techniques of inquiry include concept isolation, propositional isolation, concept analysis, propositional analysis, definition (including classificatory, synonymy, equivalent expression), explication, model case, contrary case, borderline case, invented case, related concept, unrelated concept, term substitution, subscripts, invented terms, social context technique, results in language technique, practical results technique. Its phenomena of inquiry are all of the discourse about the educational process. Its purpose of inquiry is description and explanation of the implications of all language about the educational process. It, of course, does not constitute a subfund of educology. Indeed educology is its phenomena of inquiry, just as education is the phenomena of inquiry for educology. Educology is the set of phenomena about which meta-educological research inquires. Education is the set of phenomena about which educological research inquires.

KIND OF INQUIRY	META-EDUCOLOGICAL INQUIRY
LOGIC OF INQUIRY	PRINCIPLE OF DEDUCTION (NECESSITY REASONING)
PRODUCT OF INQUIRY	VERIFIED ANALYTIC META-STATEMENTS
TECHNIQUES OF INQUIRY	CONCEPT ISOLATION, PORPOSITIONAL ISOLATION, DEFINITION (INCLUDING CLASSIFICATORY, EQUIVALENT EXPRESSION, SYNONYMY AND REPORTIVE, STIPULATIVE, AND PROGRAMMATIC), EXPLICATION, MODEL CASE, CONTRARY CASE, BORDERLINE CASE, INVENTED CASE, RELATED CONCEPT, UNRELATED CONCEPT, TERM SUBSTITUTION, SUBSCRIPTS, INVENTED TERMS, SOCIAL CONTEXT TECHNIQUE, RESULTS IN LANGUAGE TECHNIQUE, PRACTICAL RESULTS TECHNIQUE
PHENOMENA OF INQUIRY (PHENOMENA INQUIRED ABOUT)	ALL LANGUAGE ABOUT THE EDUCATIONAL PROCESS
PURPOSE OF INQUIRY	DESCRIPTION AND EXPLANATION OF THE NECESSARY IMPLICAITONS OF DISCOURSE ABOUT THE EDUCATIONAL PROCESS
SUBFUND OF EDUCOLOGY	NONE: META-EDUCOLOGY IS A FUND OF KNOWLEDGE AT A SECOND LEVEL, ABOVE AND OUTSIDE OF EDUCOLOGY

Figure 5: Critical Categories for FormingMeta-Educology

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It is the duty of the educological researcher to be expert in both educological inquiry and meta-educological inquiry, for both are required in the task of making warranted assertions about the educational process. It is the educological researcher's responsibility to identify significant problems about the educational process and to solve those problems. It is also the educological researcher's obligation to clarify what kind of problem she or he is undertaking to solve, i.e., what logic of inquiry the problem requires, what product of inquiry it implies, what techniques of inquiry it indicates, which phenomena of inquiry demand its focus, and what purposes of inquiry it serves. To ask and answer these five questions is to undertake meta-educological research. If the educological researcher omits these questions, she or he risks derailment at the very beginning of the inquiry. Much work can be wasted, and invalid results will be perpetrated, if an analytic question is mistaken for an empirical one, or an empirical one for a normative question. Each kind of question necessarily implies its appropriate logic, product, techniques, phenomena, and purpose of inquiry. Analytic questions must be treated as analytic questions for the results to be valid, and so it is for normative and empirical questions. This is why educological researchers, in order to do their job properly and correctly, must be able to undertake expert meta-analysis at the second level of discourse (i.e., statements about statements about the educational process) as well as at the first level of discourse (i.e., statements about the educational process).

Educology and Knowing about Education

Educology is the fund of recorded propositional knowledge about the educational process. It is located in the language of books or any other medium suitable for recording statements (e.g., magnetic tape, microfilm, microfiche). Recorded propositional knowledge about the educational process is to be contrasted with knowing about the educational process. Knowing about education is the realised ability to function adequately in relation to the educational process. It is located within people. It is their cognitive function in relation to the educational process. People can study the recorded propositions in educology in order to extend their educological knowing. In doing so, they extend their cognitive function in relation to the educational process. Through their study, they might improve their function with respect to their conduct as teachers, students, counselors, curriculum developers, educational administrators, or educological researchers (including retro-searchers, re-searchers, and neo-searchers). Through the study of educology, persons can extend their ability to speak adequately about education or to speak adequately while engaging within the process of education as a teacher, student, counselor, administrator, or curriculum developer. They might extend their ability to think to themselves, silently, about education, to write soundly about education, or to draw supportable and warranted inferences about education. Studying educology is a means by which one might extend one's ability to recall educational states of affairs, anticipate educational moments, invent educational occasions, or discern educational transactions. Unfortunately, we are all mortal, and our knowing dies with us. But educology does not die. While cognitive function ceases, recorded propositions remain. Each person who comes anew to the fund of recorded propositions about education has the opportunity to extend their educological knowing. Through successful research (retro-search, re-search, neo-search) they may even contribute to the

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revision and extension of the fund of recorded propositions which constitutes educology.

Summary and Conclusion

We have argued that the educological perspective is one in which inquiry treats the educational process as a dependent variable and other factors or processes as independent variables. Educological inquiry can be of at least three kinds, depending upon the logic of inquiry implied by the questions which are posed in the inquiry, viz., analytic, normative, or empirical. Successful educological inquiry either affirms, disaffirms, or adds to the existing fund of recorded propositional knowledge about the educational process. That fund of knowledge is properly named educology. The educational process upon which educological inquiry focuses is one in which someone teaches and someone studies some content within some social and cultural milieu. The basic elements or components of the process are teacher, student, content, and setting. Its derivative components include intentions, methods, styles, resources, and language used by teachers and students. The educational process may be official or unofficial, worthwhile or undesirable, and effective or ineffective. Recorded propositional knowledge about the educational process can be distinguished with respect to which aspect of educational phenomena it characterizes, describes, and explains. There is knowledge about past educational processes, about extant educational processes, about effective educational practices, about language within the educational process, and about good, worthwhile, ethical and bad, undesirable, and inethical states of affairs within the educational process. All of these categories of recorded propositional knowledge are included in the fund of knowledge which is educology. It is the special responsibility of educological researchers to engage in the continuous act of inquiry (retro-search, re-search, neo-search) in order to reaffirm, negate, or innovate propositions about the educational process. In order to perform their responsibilities expertly and properly, educological researchers need to know how to undertake analytic, empirical, and normative inquiry. They also need to know how to conduct meta-educological inquiry. All of these kinds of inquiry are implied in the conduct of educological research. Finally, educology, the fund of knowledge about education, is related to, but essentially different from knowing about the educational process. Recorded verified statements constitute educology, and these are located in books and other media. Adequate cognitive function constitutes knowing, and this is located in the realized ability (*vs.* the potential capability) of people. When people die, their knowing dies with them. But educology, the fund of recorded propositions about the educational process, remains. People can study educology, and from this study, extend their knowing about the educational process. Their study might be done from the viewpoint of improving their understanding of education as one of the universal processes common to all human kind. It also might be done with some professional view in mind, such as to improve their procedural soundness and conduct as a teacher, student, counselor, school administrator, or educological researcher. In reply to the oft asked question, "Is education a discipline?" we reply, "No, it is a process of teaching and studying." Is educology a discipline? Again, we reply, "No." It is the fund of knowledge about education. Discipline is, of course, required to form educology, and that is the discipline of analytic, empirical, and normative inquiry. That discipline has to be used in a coordinated way and in a way which is suited to the particular questions which the educological inquiry is addressing.

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Footnotes

1. See M.S. Knowles, The Modern Practice of Adult Education: Andragogy versus Pedagogy, New York: Association Press, 1970, and K.P. Cross, Adults as Learners, San Francisco: Jossey-Bass, 1981, for the argument that 'andragogy' is an appropriate name for knowledge about adult education. See J.S. Mill, A System of Logic, New York, 1946, Book VI, Chapter III, Paragraph 4, for the argument for 'ethology'. See E. Stones, Psychopedagogy: Psychological Theory and the Practice of Teaching, London: Methuen & Co., 1979, for the argument for the use of the term, 'psychopedagogy'.

2. The argument for the term, 'educology', as an appropriate name for knowledge about education was originally developed by Elizabeth Steiner Maccia in "Logic of Education and Educatology: Dimensions of Philosophy of Education," Proceedings of the Twentieth Annual Conference of the Philosophy of Education Society, 1964. The history of educology is recounted in J.E. Christensen (ed.), Perspectives on Education as Educology, Washington, D.C.: University Press of America, 1981, and in J.E. Christensen and J.E. Fisher, Organization and Colleges of Education: An Educological Perspective, Sydney: Educology Research, 1983.

3. The argument for educology over pedagogy is cogently stated in Elizabeth Steiner, Educology for the Free, New York: Philosophical Library, 1981, and it is iterated in J.E. Christensen, Curriculum, Education, and Educology, Sydney: Educology Research Associates, 1981.

4. A more detailed argument for educology over andragogy can be found in J.E. Christensen, Curriculum, Education, and Educology, Sydney: Educology Research Associates, 1981.

5. See Elizabeth Steiner, Educology of the Free, New York: Philosophical Library, 1981, pp. 50-51, for the full argument for educology over ethology.

6. See E. Stones, Op. Cit., for an elaboration of the concept of psychopedagogy.

7. These distinctions of retro-search, re-searching, and neo-searching are made by Elizabeth Steiner in, "Educology: Thirteen Years Later," in J.E. Christensen (ed.), Perspectives on Education as Educology, Washington, D.C.: University Press of America, 1981.

8. Elizabeth Steiner made the distinction of praxiology of education in Elizabeth Steiner Maccia, "The Non-Identity of Philosophy and Theory of Education," in John Martin Rich (ed.), Readings in Philosophy of Education, 2nd ed., Belmont, California: Wadsworth Publishing Co., 1972. For other discussions of praxiology, see Tadeusz Kotarbinski, Praxiology; An Introduction to the Sciences of Efficient Action, Translated from the Polish by Olgierd Wojtasiewicz, London: Pergamon Press, 1965, and James F. Perry, "Praxiology of Education as a Branch of Educology," in J.E. Christensen (ed.), Perspectives on Education as Educology, Washington, D.C.: University Press of America, 1981.

9. See, for example, J. Dewey, Democracy and Education, 1916; E. Bayles, Pragmatism in Education, New York: Harper and Row, 1966; and J. Butler, Idealism in Education, New York: Harper and Row, 1966.

10. See G. Ryle, The Concept of Mind, New York: Barnes and Noble, 1949; I. Scheffler, The Language of Education, Springfield, Illinois: Charles C.

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Thomas, 1960; B.O. Smith and R.H. Ennis, Language and Concepts in Education, Chicago: Rand McNally and Co., 1961; J. Gribble, Introduction to Philosophy of Education, Boston: Allyn and Bacon, 1969.

11. This term, 'analytic philosophy of educology', and its conception are derivative of the work of Elizabeth Steiner. See her chapter, "The Nonidentity of Philosophy and Theory of Education," in John Martin Rich (ed.), Op. Cit. In that chapter, Steiner uses the term, 'philosophy of educology', rather than 'analytic philosophy of educology'. This second term is used here to add clarity to the explication.

12. This follows to some extent Elizabeth Steiner's use of the term, 'meta-educology', although she includes more in this concept than philosophy of educology. See "The Nonidentity of Philosophy and Theory of Education," Op. Cit.

13. See for example Jeane Pietig, "Is Foundations of Education a Discipline?" in Educational Studies, Vol. 6, No. 1/2 (1975), pp. 1-2.

14. See for example, "Report of the Task Force on Academic Standards: Guidelines for Professional Academic Instruction in Foundations of Education, Educational Studies and Educational Policy Studies," in the American Educational Studies Association Newsletter, Vol. 3, No. 3 (1977), pp. 2-6.

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Appendix 1: Categories of Phenomena within the Educational Process for Educological Inquiry

		THE EDUCATIONAL PROCESS									
		THE OFFICIAL EDUCATIONAL PROCESS				THE UNOFFICIAL EDUCATIONAL PROCESS					
		LEVELS OF THE EDUCATIONAL PROCESS				LEVELS OF THE EDUCATIONAL PROCESS					
		(A) EARLY CHILDHOOD	(B) PRIMARY	(C) SECONDARY	(D) ADULT, FURTHER, TERTIARY	(E) EARLY CHILDHOOD	(F) MIDDLE CHILDHOOD	(G) ADOLESCENCE	(H) EARLY ADULTHOOD	(I) MIDDLE ADULTHOOD	(J) SENESCENCE
BASIC COMPONENTS OF EDUCATION	TEACHER (1)										
	STUDENT (2)										
	CONTENT (3)										
	MILIEU (4)										
DERIVATIVE COMPONENTS OF EDUCATION	INTENTIONS (5)										
	METHODS (6)										
	STYLES (7)										
	RESOURCES (8)										
	LANGUAGE (9)										
	CURRICULUM (10)										
BASIC PROCESSES IN EDUCATION	TEACHING (11)										
	STUDYING (12)										
	LEARNING (13)										
PROCESSES CLOSELY RELATED TO EDUCATION	DEVELOPMENT (14)										
	SOCIALIZATION (15)										
	ENCULTURATION (16)										
	COUNSELING (17)										